REMARKS

This Amendment and Response to Final Office Action is being submitted in response to the final Office Action mailed December 13, 2005. Claims 1-22 are pending in the Application. Claims 1, 2, 12-14, and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Juniper ("Juniper Networks M40 Internet Backbone Router Inter-Operating With the CIENA MultiWave Sentry DWDM System") in view of the admitted prior art and Waschka, Jr. (U.S. Patent No. 4,449,247). Claims 3-11, 15-19, 21, and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Juniper in view of the admitted prior art and Waschka, Jr., as applied to Claim 1, and further in view of Bullock et al. (U.S. Patent No. 5,764,651). The Specification stands objected to for containing minor informalities. Finally, the Drawings stand objected to for containing minor informalities.

In response to these rejections and objections, Claims 1, 3-5, 9-12, 16, 18, and 19, the Specification, and the Drawings have been amended to further clarify the subject matter which Applicants regard as their invention, without prejudice or disclaimer to continued examination on the merits. These amendments are fully supported in the Specification, Drawings, and Claims of the Application and no new matter has been added. Based upon the amendments, reconsideration of the Application is respectfully requested in view of the following remarks.

Objection to the Specification:

The Specification stands objected to for containing minor informalities. Specifically, Examiner indicates that, on page 3, second full paragraph, "less the specified BER" is used where -- less than the specified BER -- may be intended.

In response to this objection, on page 3, second full paragraph, "less the specified BER" has been replaced with -- less than the specified BER --.

Therefore, Applicants submit that the objection to the Specification for containing minor informalities has now been overcome and respectfully request that this objection be withdrawn.

Objection to the Drawings:

The Drawings stand objected to for containing minor informalities. Specifically, Examiner indicates that the location of the box for reference character 300 of RX_n of element 112 is in the wrong location and, for consistency with the other RX units of element 112, should be located in the upper left corner of RX_n of element 112, not the lower left corner.

In response to this objection, replacement Figure 2 has been provided in which the box for reference character 300 of RX_n of element 112 is in the upper left corner of RX_n of element 112, not the lower left corner.

Therefore, Applicants submit that the objection to the Drawings for containing minor informalities has now been overcome and respectfully request that this objection be withdrawn.

Rejection of Claims 1, 2, 12-14, and 20 Under 35 U.S.C. 103(a) - Juniper and Waschka, Jr.:

Claims 1, 2, 12-14, and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Juniper ("Juniper Networks M40 Internet Backbone Router Inter-Operating With the CIENA MultiWave Sentry DWDM System") in view of the admitted prior art and Waschka, Jr. (U.S. Patent No. 4,449,247).

Independent Claim 1 has been amended to recite:

> 1. A method of testing a bit error rate for each of a plurality (N) of optical communication channels, N being greater than 2, in a wavelength division multiplexed optical communication system having N optical transmitters communicating to N optical receivers via N communication channels, the N optical receivers being co-located with each other and with the N optical transmitters for testing, the method comprising:
>
> cascading said N optical communication channels such that an electrical output of an optical receiver i for an optical communication channel i is connected to an input of an optical transmitter i + 1 for an optical communication channel i +

1, for all values of i from one to N-1, so as to form a continuous cascade of a co-located plurality of optical transmitter/receiver pairs;

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel;

supplying the bit error rate test signal from an output of optical receiver N to the bit error rate tester;

detecting errors in the bit error rate test signal received by the bit error rate tester and calculating therefrom a measured system bit error rate;

comparing the measured system bit error rate with a predetermined system bit error rate threshold;

monitoring a signal-to-noise parameter (Q) for the bit error rate test signal at each of the N optical transmitters and N optical receivers when the measured system bit error rate is greater than the predetermined system bit error rate threshold to thereby determine which of the N optical communication channels has an associated bit error rate value that is greater/less than a specified bit error rate value; and

comparing the monitored Q with a predetermined Q threshold, wherein the predetermined Q threshold corresponds to the predetermined system bit error rate threshold.

The present invention includes an internal performance monitor located on each transmitter and receiver of the system. The internal performance monitor is used to monitor both a bit error rate and a signal-to-noise parameter (Q) at each transmitter and receiver. Waschka, Jr. teaches only the monitoring and comparing of a bit error rate at each transmitter and receiver (and this deficiency is not remedied by Juniper). Signal Q is used in optical systems to assess signal quality, from a purely optical perspective, whereas a bit error rate is used to assess signal quality from a purely digital perspective. In the absence of bit errors, a system may be assumed to be in good operating condition from a purely digital perspective. However, signal Q may still be degraded to a degree such that errors arise. Thus, the monitoring of both of these parameters, digital and optical, as recited in independent Claim 1, is novel and desirable.

Therefore, Applicants submit that the rejection of Claims 1, 2, 12-14, and 20 under 35 U.S.C. 103(a) as being unpatentable over Juniper in view of the admitted prior art and Waschka, Jr. has now been overcome and respectfully request that this rejection be withdrawn.

Rejection of Claims 3-11, 15-19, 21, and 22 Under 35 U.S.C. 103(a) - Juniper, Waschka, Jr., and Bullock et al.:

Claims 3-11, 15-19, 21, and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Juniper in view of the admitted prior art and Waschka, Jr., as applied to Claim 1, and further in view of Bullock et al. (U.S. Patent No. 5,764,651).

Independent Claims 5 and 9 have been amended to recite:

5. A method for performing a bit error rate test for a plurality of optical communication channels of a wavelength division optical communication system having transmitters and receivers, the transmitters being co-located with each other and with the receivers for testing, comprising:

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel of said plurality of optical communication channels arranged in a continuous cascade of a co-located plurality of transmitter/receiver pairs;

receiving the bit error test signal at the bit error rate tester from a final optical receiver;

detecting a measured bit error rate; and

identifying at least one faulty communication channel from said plurality of optical communication channels by performing a bit parity check ***and a signal-to-noise (Q) calculation for each transmitter/receiver pair*** because the measured bit error rate is greater than a predetermined system bit error rate threshold.

9. A system for testing optical communication channels for wavelength division multiplexed optical communication using transmitters and receivers, the transmitters being co-located with each other and the receivers for testing, comprising:

a bit error rate tester to generate a bit error rate test signal, wherein the bit error rate test signal is transmitted over a plurality of optical communication channels arranged in a continuous cascade of a co-located plurality of optical transmitter/receiver pairs;

said tester determining a measured bit error rate, wherein said tester determines whether said measured bit error rate is greater than a predetermined bit error rate threshold for said plurality of optical communication channels;

a diagnostic analyzer to analyze diagnostic output signals from said transmitters and said receivers and to identify at least one faulty communication channel from said optical transmitter/receiver pairs using a bit parity check because said measured bit error rate is greater than said predetermined bit error rate threshold; and

an internal performance monitor on said transmitters and said receivers, wherein said internal performance monitor monitors bit errors and signal-to-noise parameters (Qs) of signals between said transmitters and said receivers.

Again, the present invention includes an internal performance monitor located on each transmitter and receiver of the system. The internal performance monitor is used to monitor both a bit error rate and a signal-to-noise parameter (Q) at each transmitter and receiver. Waschka, Jr. teaches only the monitoring and comparing of a bit error rate at each transmitter and receiver (and this deficiency is not remedied by Juniper or Bullock et al.). Signal Q is used in optical systems to assess signal quality, from a purely optical perspective, whereas a bit error rate is used to assess signal quality from a purely digital perspective. In the absence of bit errors, a system may be assumed to be in good operating condition from a purely digital perspective. However, signal Q may still be degraded to a degree such that errors arise. Thus, the monitoring of both of these parameters, digital and optical, as recited in independent Claim 1, is novel and desirable.

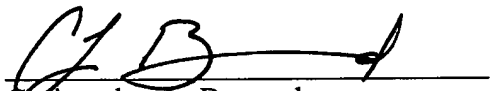
Therefore, Applicants submit that the rejection of Claims 3-11, 15-19, 21, and 22 under 35 U.S.C. 103(a) as being unpatentable over Juniper in view of the admitted prior art and Waschka, Jr., as applied to Claim 1, and further in view of Bullock et al., has now been overcome and respectfully request that this rejection be withdrawn.

Conclusion

Applicants would like to thank Examiner for the attention and consideration accorded the present Application. Should Examiner determine that any further action is necessary to place the Application in condition for allowance, Examiner is encouraged to contact undersigned Counsel at the telephone number, facsimile number, address, or email address provided below. It is not believed that any fees for additional claims, extensions of time, or the like are required beyond those that may otherwise be indicated in the documents accompanying this paper. However, if such additional fees are required, Examiner is encouraged to notify undersigned Counsel at Examiner's earliest convenience.

Respectfully submitted,

Date: February 21, 2006



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AMENDMENTS TO THE DRAWINGS

Please amend the Drawings as follows, without prejudice or disclaimer to continued examination on the merits:

Please replace Figure 2 with replacement Figure 2, attached hereto.